Improving Postpartum Care Among Low Parity Mothers in Palestine

Center for Development in
Primary Health Care (CDPHC)
Al Quds University

May 2003

This study was funded by the U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID) under the terms of Cooperative Agreement number HRN-A-00-98-00012-00 and Population Council Subagreement Number AI01.12A. The opinions expressed herein are those of the authors and do not necessarily reflect the view of USAID.

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ACRONYMS

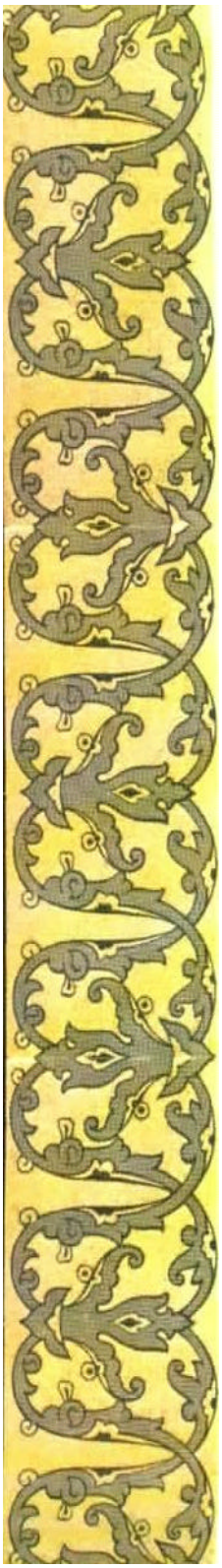
BSE	Breast Self-examination
CHW	Community Health Worker
FP	Family Planning
IMR	Infant Mortality Rate
LAM	Lactational Amenorrhea Method
MCH	Maternal and Child Health
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
NIS	New Israeli Shekel
NGO	Non-governmental Organization
PFS	Patient's Friends Society
PHP	Pilot Health Project
RH	Reproductive Health
TFR	Total Fertility Rate
UHWC	Union of Health Worker Committee
UNRWA	United Nations Relief Work Agency
UPMRC	Union of Palestinian Medical Relief Committee
USAID	United States Agency for International Development

ACKNOWLEDGEMENTS

The Center for Development in Primary Health Care, Al-Quds University (CDPHC) would like to thank all those who participated in this study and made it possible for CDPHC to compile the necessary information. Special thanks go to clients of the Union of Palestinian Medical Relief Committee, the Union of Health Workers Committee and the Patient's Friends Society. Gratitude also goes to the Community Health Workers, the "front line health promoters," who carried out the first and second home visits under very difficult circumstances.

CDPHC would also like to thank the field supervisors and data collectors for their tremendous efforts during data collection despite closures and restricted mobility. The research team's appreciation also goes to Dr. Faisal Awartani for his input in the statistical analysis of the data.

Finally, CDPHC would like to express their gratitude to staff of the Population Council's Frontiers in Reproductive Health Program for their valuable technical support and to USAID for financial support of this study.



EXECUTIVE SUMMARY

The lack of care provided to mothers and newborns during the perinatal period is an important health care problem in the West Bank and Gaza. While a large percentage of women receive some antenatal care, very few return to health facilities for postpartum check-ups and few begin using family planning during the postpartum period for birth spacing. The percentages are expected to be even lower among low parity women, i.e. those with one or two living children.

In an effort to improve the health status of Palestinian women and their children in the West Bank and Gaza, the United States Agency for International Development (USAID), in collaboration with the Palestinian Ministry of Health and a number of NGOs, designed and funded a 28-month pilot activity, the Pilot Health Project (PHP), that is expected to have a positive impact on the health of women and children. The project's interventions include establishing a basic package of quality antenatal and postpartum care services aimed at improving the health giving practices of providers and health seeking behavior of families. In addition, the project included three experimental service delivery interventions: (1) reaching low parity women through a second home visit by community health workers (CHWs), (2) involving women's husbands and influential males, and (3) creating outreach linkages with hospitals. This report describes the results of the intervention for low parity women.

Description of the Intervention

The PHP basic service delivery model includes home visits by a CHW to recently delivered women two-three days after delivery. The study intervention involved adding a second home visit to consenting women of low parity 30-38 days after delivery by the same CHW who conducted the first visit. During the second home visit the CHW reminded the women about their day 40 clinic visit for postpartum care and highlighted the importance and benefits of that visit. The CHW also provided counseling and health education specific to low parity women and their husbands (if available) relating to maternal and child health, contraception, and breast and cervical cancer awareness and prevention. CHWs received training on how to provide counseling and services that are tailored to the needs of low parity women.

Study Hypotheses

Conducting an additional home visit to low parity women during the postpartum period is hypothesized to have a positive effect on:

1. Women's knowledge and practice regarding their own health as well as that of their newborn child;
2. Utilization of postpartum services, particularly an increase in day 40 clinic visits;
3. Social support, particularly by the husband;
4. Contraceptive use approximately six months postpartum; and
5. Awareness of breast and cervical cancer, and prevention practices.

Research Methods

A two group posttest only design was used to investigate the study's hypothesized effects. Clinics in the PHP were grouped by service delivery NGO, matched by caseload size, and randomly assigned into experimental and control groups. Participants in both the intervention and control groups received the PHP basic package of services. In addition, participants in the intervention group received a second home visit by the CHW, who delivered the experimental services. A home interview was conducted with low parity women in the two study groups six months postpartum in order to measure the outcomes of interest.

Study Findings

A total of 257 women completed the study (112 in the control group and 145 in the intervention group). The two study groups were comparable on the following characteristics: women's and husbands' education, husbands' occupation, number of living children, and reproductive characteristics. However, the two groups were different on the women's age (mean age= 23.7 years in the intervention group versus 22.1 years in the control group, $p<0.05$), women's work status (8.3% of women in the intervention group work for cash versus 1.8% in the control group, $p=0.05$), and family expenditure (22.2% of mothers in the intervention group have an average monthly expenditure of more than 2,000 NIS versus 10.6% of control group mothers, $p<0.01$).

The two study groups were also different on geographic distribution (72.7% of intervention group women lived in the West Bank compared to 93.8% of mothers in the control group, $p<0.001$), and on the NGO clinic where they received antenatal care, with the majority of women in the intervention group (56.6%) recruited from Patient's Friends Society, as opposed to a majority in the control group (58.9%) recruited from the Union of Palestinian Medical Relief Committee ($p<0.001$).

Based on participants' reports on the home visits, the husband was seldom present during the second home visit. Topics discussed by the CHW during the visit were: importance of conducting a day 40 visit to the clinic (87.9%), family planning methods (32.6%), maternal care (31.8%), breastfeeding (19.7%), and breast self-exam (12.1%). The CHW also explained to the

mother how to take care of the baby (50.8%), or conducted a physical exam of the newborn (24.2%).

The study results showed that the second home visit by the CHW was associated with a substantial increase in the likelihood of visiting the MCH clinic on day 40 (49.1% of intervention group mothers versus 35.6% of control group mothers, $p<0.05$). The second visit was also associated with increased support provided by the husband, namely by encouraging the mother to visit the clinic on day 40 (51.0% of intervention group husbands versus 29.0% of control group husbands, $p<0.05$), as well as increased likelihood of husband-wife communication about timing of next pregnancy (86.0% of intervention group couples discussed timing of next pregnancy versus 77.0% of control group couples, $p<0.05$).

The intervention, however, was not associated with improved knowledge or practices of low parity mothers regarding their own health or that of the newborn. Mothers' knowledge of possible maternal or newborn complications during the postpartum period was similar in the intervention and control sites. Also, mothers' practices pertaining to their own personal cleanliness, as well as that of the newborn, were similar in the two study groups, but with mothers in the control group reporting better practices for caring for their episiotomy than those in the intervention group (55.0% of mothers in the control group reported cleaning the site of the wound with disinfectant and water compared to 42.0% of mothers in intervention sites, $p<0.05$). Moreover, knowledge and practices related to breastfeeding, weaning, and immunization of the newborn were similar in the two study groups.

Despite the fact that intervention group mothers were more likely to visit the clinics on day 40, control group mothers made more MCH visits during the first six months after delivery compared to intervention group mothers (average number of visits was 3.6 versus 3.2 respectively, $p<0.05$).

While husbands of intervention group mothers were more likely to encourage their wives to make the day 40 visit and more likely to discuss the timing of the next pregnancy with their wives compared with those in the control group, husbands in the control group were more likely to want a birth interval of three or more years (56.7% versus 25.8%, $p<0.001$). Husbands in the two study groups were equally likely to discuss use of family planning after last delivery, to support the use of family planning, to encourage their wives to use family planning, and to encourage their wives to take a sick child to clinic.

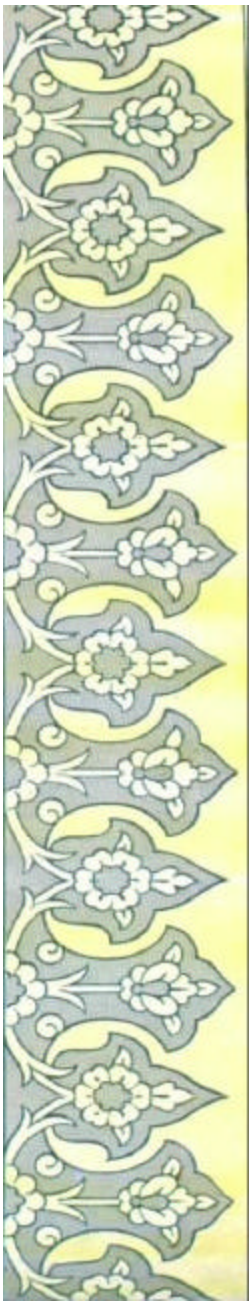
The intervention was not associated with increased use of family planning methods, improved knowledge, or more positive attitudes towards family planning. Less than two-thirds of mothers in the two study groups were currently using a family planning method at six months from delivery (65.2% of intervention group mothers and 63.4% of control group mothers). Logistical regression analysis showed the following factors as most predictive of contraceptive use at six months: husband's education of secondary level or above ($B=0.64$, $p<0.05$), husband's positive attitude towards family planning ($B=0.39$, $p<0.05$), and continued breastfeeding ($B=1.14$, $p<0.001$).

Knowledge of LAM as a family planning method was equally low in the two study groups (47.7% of mothers in the intervention group and 39.3% of mothers in the control group did not know any of the criteria for effective use of LAM), while attitudes towards the use of family planning were more positive in the control group than the intervention group (64.3% of control group mothers want to have more children, as opposed to 95.9% of intervention group mothers, $p<0.05$. And 48.6% of control group mothers versus 27.6% of intervention group mothers want a birth interval of three or more years, $p<0.01$).

The intervention was not associated with improved awareness or prevention practices with regard to breast or cervical cancer. Mothers' knowledge and practice with regard to the Pap smear test was similar in the two study groups (52.7% of intervention group mothers and 61.6% of control group mothers knew about the test while 3.8% of intervention group mothers and 4.5% of control group mothers actually had a Pap smear test since the index delivery). On the other hand, more mothers in the control group knew how to conduct a breast self-exam (64.3% versus 46.5%, $p<0.05$) and a higher proportion of control group mothers reported performing a breast self-exam since the last delivery (45.0% in control sites versus 27.3% in intervention sites, $p<0.01$). These differences suggest possible overlap with other program interventions launched by UNRWA or the MOH in similar reproductive health areas.

Recommendations

- At least one visit should be made to low parity women during the postpartum period.
- Performance of community health workers during home visits, especially with regard to information exchange, needs improvement through proper monitoring, supervision and continuous training.
- Efforts should be made to involve the husbands of low parity women through changing the time of the visit to the afternoons and/or through providing written materials to the woman so she can share them with her husband.
- The CHW should encourage mothers to request postpartum services during clinic visits, even if they do not have any postpartum warning signs.
- Services provided during the day 40 visit should cater to the needs of the mother as well as the newborn.
- Use of mass media, especially television, as a means for disseminating health information to low parity mothers should be investigated.
- Research is needed to study the knowledge and attitudes of low parity couples towards birth spacing and use of contraception.



BACKGROUND

Palestinian women have relatively high levels of fertility. The total fertility rate (TFR) is estimated to range between 5.0 and 5.6 for the West Bank and between 6.6 and 6.8 for Gaza.[1] These rates are substantially higher when compared to other countries in the region, namely Jordan (3.6), Lebanon (2.5) and Syria (4.1). Cultural norms that contribute to high fertility include early marriage, preference for sons, and preference for large families. With almost half (47.0%) of the population under 15 years of age, population growth will continue due to population momentum even if birth rates decline in the near future.[2]

The estimates of infant mortality rate (IMR) in the West Bank and Gaza vary greatly, ranging from 26 to 54 deaths per 1,000 live births.[3] There are also wide regional differences. The IMRs for neighboring countries are lower, with the estimated rate in Egypt of 44, 31 in Jordan, 33 in Lebanon, and 24 in Syria.[4] Neonatal mortality as a proportion of IMR has been increasing, a condition also noted in countries such as Egypt and Morocco, with premature birth as the primary cause. [5] The maternal mortality ratio (MMR) is estimated to be between 70 and 80 deaths per 100,000 live births.[6] However, this figure is skewed by the inclusion of women in high-risk categories including high parity, short birth intervals, and women giving birth at a young age. Though the rates cited above are comparatively lower than those in most other countries in the region, the Palestinian Ministry of Health (MOH) estimates that pregnancy and maternity-related complications are the third leading cause of death among Palestinian women of reproductive age.[7]

The lack of care provided to mothers and newborns during the perinatal period is an important health care problem in the West Bank and Gaza. Although the vast majority of mothers (96.0%) receive some antenatal care from a health professional, only one-quarter of mothers return for postpartum check-ups.[8] In addition, survey data from the West Bank show that few mothers adopt family planning for spacing births during the postpartum period.[9] Pretest and posttest surveys conducted under the PHP

[1] Palestinian Central Bureau of Statistics, Population Summaries for West Bank and Gaza, U.S. Census Bureau International Data Base, http://www.census.gov/ipc/www/idbnew/html.
[2] Population Reference Bureau (PRB), 2001 World Population Data Sheet, www.prb.org
[3] PRB, op. cit.,; Palestinian Central Bureau of Statistics (PCBS), The Demographic Survey in the West Bank and Gaza: Final Report, August, 1997. Ramallah-Palestine.
[4] PRB, op. cit.
[5] N. Ismail and M. Shahin, 1996. *Family Planning and Women's Reproductive Health Survey in the West Bank.* Planning and Research Center: Ramallah, Palestine.
[6] PCBS, op. cit, 1997
[7] Ismail and Shahin, op. cit.
[8] Palestinian Central Bureau of Statistics, Health Survey 2000 Survey Objectives, http://www.pcbs.org/English/health/hl_2000/object.htm

indicated that only 3.4 percent and 4.2 percent of women, respectively, made return visits to clinics to receive postpartum care.[10]

The current level of modern contraceptive use among married women aged 15-49 is estimated to be 51.0 percent in the West Bank and Gaza.[11] This aggregate figure, however, hides wide variations in use by geographic area. More importantly, aggregate figures mask the fact that contraceptive use is very low among younger, low parity women, and that family planning is generally only acceptable after the fourth child is born.

THE PILOT HEALTH PROJECT (PHP)

As part of efforts to improve the health status of Palestinian women and their children in the West Bank and Gaza, the United States Agency for International Development (USAID), in collaboration with the Palestinian MOH and seven partners,[12] designed and funded a 28-month pilot activity that is expected to have a significant impact on the health of women and children. The goal of the Pilot Health Project (PHP) is to upgrade antenatal and postpartum services in 27 primary health care clinics in three areas of the West Bank and Gaza, with the long-term objective of reducing infant and maternal mortality. The project interventions include establishing a basic package of quality antenatal and postpartum care services aimed at improving the health-giving practices of providers and health-seeking behavior of families.

The basic package of services offered at the primary health care clinics includes the following four elements:

1. Improved antenatal care through NGO clinics;
2. A single home visit by a Community Health Worker (CHW) two to three days after delivery to (i) assess the condition of the mother and newborn and (ii) provide health education about breastfeeding, nutrition, immunization, and care of the newborn;
3. Counseling the mother on birth spacing and the need for postpartum contraception; and
4. Parental encouragement to bring the infant to the clinic at 10 days old for a check up by a physician, and special encouragement to return to the clinic with the newborn on the 40th day after delivery for postpartum assessment of the mother and baby, including counseling about the health benefits of birth spacing.

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[9] Ismail and Shahin, op. cit.
[10] Alpha International, 2002, Assessment of Pilot Health Project Outcome Indicators: West Bank/Gaza
[11] PRB, op. cit.
[12] Partners include CARE International, the Population Council, the Patients Friends Society (PFS), the Union of Palestinian Medical Relief Committees (UPMRC), the Union of Health Work Committees (UHWC), the Health Development, Information and Policy Institute (HDIP) and the Center for Development in Primary Health Care (CDPHC).

STUDY RATIONALE

As mentioned above, only one-quarter of women return for postpartum check-ups, and few begin using family planning for spacing births during the postpartum period. This percentage is expected to be even lower among women of low parity, i.e. women with one or two living children. Most low parity women have limited knowledge of child health practices and rarely begin using a family planning method during the postpartum period.

As the PHP's basic service delivery package does not include any activities specifically designed to address the needs of low parity women, an experimental service delivery intervention was designed focusing on low parity women to provide them with information and services tailored to meet their needs. These activities highlighted the health benefits for both mothers and children of spacing children. The two aims of this study were: (i) to develop a service delivery strategy that would increase postpartum health service use by low parity women and their children; and (ii) to increase family planning use and birth spacing among low parity women.

DESCRIPTION OF THE INTERVENTION

The study's intervention consisted of adding a second home visit by the Community Health Worker (CHW) for all consenting low parity women. The PHP's basic service delivery model included a single home visit two to three days after delivery. The additional visit was designed to take place approximately 30-38 days after delivery by the same CHW who conducted the first home visit at two to three days after delivery.

During the second home visit the CHW was supposed to remind the woman about her day 40 clinic visit for postpartum care for her and her baby. In addition, the CHW assessed both the mother and newborn carefully to identify any health problems that needed immediate medical care. In such cases the CHW either referred or accompanied the woman to the health clinic.

CHWs received training on how to provide counseling and services tailored to the needs of less experienced, low parity mothers and their husbands.[13] A comprehensive checklist of counseling and education topics was developed to help the CHWs conduct structured and detailed visits.

The following activities were undertaken during the home visits:

- Based on information from the woman's medical record, the CHW brought to the mother's attention any medical conditions requiring attention and made appropriate referrals;
- The CHW provided counseling to the mother regarding her health and the health of the infant, including the importance of breastfeeding, immunizations, and the use of postpartum family planning methods for birth spacing;

[13] This training module was developed and implemented by CDPHC.

- Medications and non-clinical family planning methods were offered to the women (as allowable) during the home visit, and women who were interested in other family planning methods were referred to a health care facility;
- IEC materials were provided to the mother and other household members to reinforce the content of the counseling;
- The social conditions of the household were assessed by the CHW and (whenever possible) counseling was provided to other members of the family, including the woman's husband, in order to support the mother's and newborn's health care needs and the use of family planning methods;
- All relevant health conditions that were noted during the visit were recorded on the mother's and newborn's health records, which are maintained in the clinic;
- The importance and benefits of the day 40 clinic visit were emphasized and key elements of the visit were highlighted (e.g. weight and height measurement, nutrition and immunization for the newborn, breast examination, assessment of uterine involution, and checking on vulvar or vaginal tears and episiotomy for the mother).

STUDY HYPOTHESES

Conducting an additional home visit to low parity mothers during the postpartum period is hypothesized to have a positive effect on:

i. Women's knowledge and practice regarding their own health, as well as that of their newborns;
ii. Utilization of health care services postpartum, particularly an increase in day 40 clinic visits;
iii. Social support, particularly by the husband;
iv. Contraceptive use approximately six months postpartum; and
v. Awareness of breast and cervical cancer and prevention practices.

The table below diagrams the low parity intervention and compares it to the basic package of services being provided by the PHP.

Table 1. Components of Basic Package and Low Parity Intervention

Activity	Basic Service Delivery Package	Low Parity Intervention
Two-three day home visit including health education, follow-up of medical conditions, referral (where appropriate), and offering of non-clinical family planning methods.	Yes	Yes
30-38 day home visit with health education and services specific to low parity mothers, including further encouragement to return to clinic for day 40 visit.	No	Yes – with special attention to needs of low parity mothers.
Day 40 encouragement for clinic visit	Yes	Yes

RESEARCH METHODOLOGY

Study Design

A two group post-test only design was used to investigate the study's hypothesized effects. Clinics in the PHP were grouped by service delivery NGO (PFS, UPMRC, and UHWC). Clinics were matched by caseload size and randomly assigned into experimental and comparison groups.[14] Both Group A (Intervention Group) and Group B (Comparison or Control Group) received the PHP basic package of services. Only Group A received the second home visit by the CHW who delivered the experimental services (described above). Note that the PHP basic package of services included encouragement to return to clinic for the day 40 visit. The study objective was to evaluate the impact of the intervention introduced by the project by comparing changes between the intervention group (Group A) and the control group (Group B) six months after the intervention on a number of key outcome indicators (described below). The schematic diagram below presents an overview of the study design.

	Day 2-3	Day 30-38	Six months
Group A:	Xa O1	Xb	O2
Group B:	Xa O3		O4

Where:

Xa = Basic package of services provided two to three days after delivery;
Xb = Home visit provided 30-38 days after delivery;

[14] The initial study design was to select the intervention and control groups from the same clinics. However, this design was discarded because it required very close monitoring and supervision in the recruitment phase, which was not deemed feasible due to the current political situation.

O1, 3 = Medical record abstracts collected continuously for six months; and
O2, 4 = Home interview six months after delivery.

Sources of Data

The main source of data in the present study was the home interview, which was conducted approximately six months postpartum. A trained interviewer administered a standardized questionnaire to collect information on the study's independent and dependent variables.

Sample Selection

The 27 clinics that make up the service delivery system of the PHP were grouped according to service delivery NGO, i.e. UPMRC, URHWC and PFS. Within each group, clinics were matched according to caseload (low, medium, heavy), and then randomly assigned to either the intervention or control group. Low parity women eligible to participate in the study were identified according to the following definition: women who had one or two living children at the time of the study, including the index birth, who plan to use the health care services of the participating clinic, and who intend to reside in the catchment area of the clinic (i.e. within reach of the CHW) for at least nine months postpartum.

Consent of all eligible women was sought for participation in the study (extra home contact for women in Group A, and home interview for women in both Group A and B). Informed consent procedures are described below. Refusals were recorded in order to determine selectivity bias. The study's sampling frame consists of women of low parity giving consent among mothers attending the PHP clinics for antenatal care during a three-month period.

Names and delivery dates of all eligible low parity women were collected on a weekly basis from intervention and control clinics. A total of 400 eligible mothers were identified (200 from each group of clinics). However, as a result of the siege imposed by the Israeli army on some of the study villages, many of the home visits could not be conducted on the assigned date. The final study sample thus included 257 women (112 women in the control group and 145 women in the intervention group).

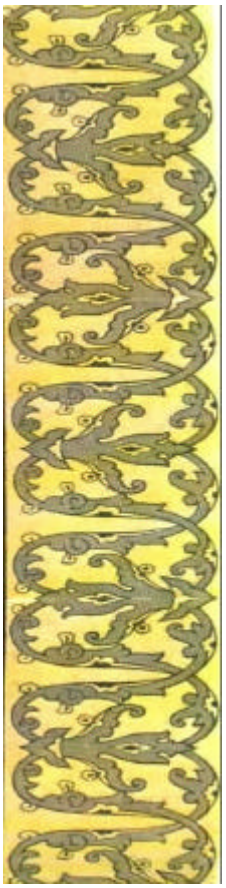
Informed Consent and Confidentiality

Interviewers, supervisors, and on-site project staff were trained in the use of informed consent procedures. Note that the first home visit by the CHW is not an element of the study; rather it is a

regular feature of the postpartum care services offered by the participating NGOs and supported by the USAID Pilot Health Project (PHP). This study's intervention begins with conducting second home visits with consenting low parity women around day 30-38 postpartum.

At the first home visit regularly conducted by the PHP's CHWs, Group A eligible low parity women were identified and their consent was obtained for a second home visit between 30-38 days postpartum. Also, Group B low parity women were identified and their consent was obtained for the home interview six months postpartum. Only those women who gave consent for the second home visit by the CHWs and follow-up home interview were visited. At the time of the second home visit for Group A, the CHW requested the woman's consent for an interviewer to conduct a follow-up interview at about six months postpartum. The location of the follow-up interview, at the woman's home or the clinic, was dependent upon the woman's wishes. At the time of the follow-up interview, the interviewer again requested consent prior to beginning the interview in both Group A and B.

Low parity women did not undergo any physically invasive procedure as part of this study. Clinic physicians supervised the CHWs who conducted follow-up visits at the participants' homes. No clinical health care services were performed in this follow-up visit.



DATA COLLECTION PROCEDURES

Abstracting of Medical Records

The medical records of consenting eligible low parity women in both study groups were identified for abstracting. The CHWs noted on the medical records indicators of the study (e.g., breastfeeding status, contraceptive use, clinic visits). This information was supplemented by clinic-based personnel whenever the low parity woman visited the clinic. For the purpose of the present study, an abstracting form was developed to collect information on key indicators noted on the medical record form. Abstracting of the medical records started two months prior to the time of the follow-up survey. CHWs in intervention sites received two days of training and orientation about the study and on how to identify, enroll and follow-up eligible low parity women. The training also covered the service components for the second home visit. The medical record abstraction and home visit conduction by the CHWs were closely monitored by the clinic staff (primarily the physician), as well as by the study team leader and field supervisors.

Home Interviews

The study questionnaire covered all areas of research interest and key outcome indicators (as shown in Table 2). The questionnaire used structured closed and open-ended response categories, was translated into Arabic, and modified after pretesting.

When conducting the home interviews, data collectors coordinated their visits with the CHWs in each village in order to facilitate identification of participants' homes. However, the CHW was not allowed to attend the interview, so as not to bias participants' responses. In case a phone number was available for the study participants, the data collector arranged appointments for the interviews in advance with the client.

Two team supervisors were appointed to check on data collection activities and to edit the completed questionnaires. In addition, the study coordinator conducted several supervisory field visits to Jenin to ensure that data collection proceeded according to the original plan. Such supervisory field visits, however, were not possible in Hebron and Gaza due to the political unrest and were substituted with daily phone calls to data collectors to insure compliance with data collection protocols and ethical guidelines.

Table 2. Key Indicators Used in the Present Study

Hypothesis	**Indicators**
1. Maternal and Newborn Care	*Maternal Care*: Self-reported knowledge of possible maternal complications during the postpartum period and practices of hygiene and care for any medical conditions related to the delivery (e.g. episiotomy). *Newborn Care*: Self-reported knowledge of potential complications to the newborn, practices of bathing, breastfeeding and proper weaning practices (timing, foods); infant immunizations for age.
2: Utilization of Postpartum Services	Day 40 clinic visit by woman and baby; additional/unscheduled postpartum visits, perceived importance and satisfaction with the day 40 clinic visit, medical conditions diagnosed and either treated or referred for care by the CHW.
3. Social Support during Postpartum Period	Respondents' reports on discussing timing of next pregnancy and use of contraception with husband, husband support of family planning, husband encouraging mother to use family planning and to make the day 40 visit, husband encouraging mother to take sick child to clinic.
4. Knowledge and Use of Postpartum Family Planning	*Knowledge*: Self-reported knowledge of LAM (frequency, exclusivity, duration). *Attitudes:* Respondent's preferences regarding timing of next pregnancy. *Use*: Self-reported use of contraceptive methods, intention to use a contraceptive method.
5. Breast and Cervical Cancer Awareness and Prevention Practices	Self-reported knowledge of breast self-examination procedures (frequency, procedure, warning signs, need for follow-up consultation), breast self-examination practices, knowledge of Pap smear test, and frequency of undergoing Pap smear test.

Training and Pilot Testing

In September 2001, a team of five interviewers (two in Jenin, one in Hebron and two in Gaza) received three days of training on data collection procedures. The training highlighted the importance and objectives of the study and included a theoretical as well as a practical component. During the training, the purpose of the study was explained and a detailed work schedule was prepared. Role-play exercises were used to practice question-asking techniques. Moreover, data collectors were provided with field guidelines in order to standardize the data collection process.

The questionnaire for home interviews was pilot-tested on 10 women in the Jenin area. The pilot test helped in assessing comprehension of the questions and in correcting areas of inconsistency or ambiguity. Data collection activities took place during the period October 2001 – January 2002.

DATA ANALYSIS

Questionnaires were coded and data were entered centrally in El-Bireh at CDPHC. Data were entered using Microsoft Access and then transferred into the Statistical Package for the Social Sciences (SPSS) Windows version 8.0 for data analysis. Bivariate analysis compared the outcomes of interest in the two study groups. T-tests and Chi Square tests were used to measure the significance of differences between the two study groups. In measuring the effects of the intervention on study outcomes, potential confounders (i.e. variables on which the two study groups were different and which were likely to be associated with the study outcomes) were controlled for in the analysis. Finally, logistic regression analysis was used to identify variables most predictive of family planning use.

STUDY LIMITATIONS

Difficulties in Conducting the Home Interviews

Conducting home interviews was difficult in many instances due to weather, political, and economic conditions. Data collection was carried out in the winter, which coincided with the rainy season and the fasting month of Ramadan. Also, as a result of the deteriorating economic conditions, some couples moved to join their extended families and hence were lost to follow up. Moreover, frequent checkpoints and siege by the Israeli army in some of the study locations made necessary follow-up and supervision difficult during data collection.

Difficulties in Implementing the Intervention

Participating NGOs varied in their policies and commitment to enforcing the second home visit. The additional home visit was seen by some clinic managers as a burden on already limited resources. In particular, transportation and movement within and between locations was perceived as difficult. Also, due to the prevailing political situation, some organizations focused

more on emergency health services than on postpartum services. Moreover, the political conditions often interfered with the home visits by CHWs, and in some cases the execution of the second home visit was either delayed or impossible.

Recall Bias

Because the home interview was conducted in the intervention communities six months after the CHW's second home visit, there may have been inaccuracies in reporting the content of the information exchange that took place between the CHW and the woman during the second home visit.

Psychological Stress

The closure and siege of the Israeli army on some of the study locations may have influenced the ability of some CHWs or participants to focus on the messages and information provided during the second home visit and on women's ability to visit the clinic on day 40.

STUDY FINDINGS

Participants' Background Characteristics

A total of 351 women participated in the study. However, during data analysis it was found out that some of the women in intervention sites received only one home visit, while others in control sites received two home visits. After excluding the above cases from the analysis the remainder were 257 women (112 in the control group and 145 in the intervention group).

Respondents in the two study groups were different on some of the characteristics. While 94.0 percent of respondents in the control group were from the West Bank and 6.0 percent from the Gaza Strip, 72.0 percent of respondents in the intervention group were from the West Bank and 28.0 percent from the Gaza Strip. The difference between the two study groups on geographic distribution was statistically significant ($p<0.001$).

Table 3 shows that the two study groups were also different based on the distribution of clinics where they received antenatal care ($p<0.001$). Control group participants were mostly recruited from the clinics of the Union of Palestinian Medical Relief Committee (UPMRC) (58.9%) or the Patient's Friends Society clinics (34.8%), whereas intervention group participants were mostly recruited from clinics of the Patient's Friends Society (PFS) (56.6%), or the Union of Health Workers

Table 3. Percent Distribution of Study Participants by Geographic Distribution and NGO Study Where They Received Antenatal Care

Characteristic	Control (N=112) %	Intervention (N=145) %
Geographic distribution		
West Bank	93.8***	72.7
Gaza	6.2	27.3
NGO where antenatal care was received:		
PFS	34.8***	56.5
UPMRC	58.9	15.9
UHWC	6.3	27.6

*** $p<0.001$

Committee (UHWC) (27.6%).

Table 4 shows socio-economic and demographic characteristics of participants in the two study groups. Women in the study groups were comparable on level of education, husband's education, occupation, and household composition, where about one-third of respondents in the two study groups mentioned that they were living with other family members, mostly members of the husband's family.

However, women in intervention sites were somewhat older than those in control sites (31.7% of women in the intervention group >25 years, compared to 17.9% of women in the control group, $p<0.05$).

A larger proportion of women in intervention clinics compared to those in control clinics worked for cash (8.3% versus 1.8%, respectively, $p<0.05$), while a larger proportion of households in intervention clinics than in control clinics spent more than 1,199 NIS (New Israeli Shekel) per month (50.8% versus 36.0%, $p<0.01$).

The analysis shows that place of residence, type of clinic, maternal age, and family expenditure are potential confounders that could affect the relationship between the independent variable (i.e. the intervention) and the outcome variables. Therefore, in most of data analysis that follows, these variables were controlled for. Hence the remaining analysis examined the relationship between the two sets of variables while controlling for the above four.

Table 4. Socio–economic and Demographic Characteristics of Participants in Control and Intervention Groups

Characteristic	Control (N=112) %	Intervention (N=145) %
Woman's age		
≤18	17.0*	11.0
19–25	65.2	57.2
>25	17.9	31.7
Mean (SD)	22.1 (3.9)	23.7 (4.8)
Women's educational level		
Illiterate	0.9	0.0
Elementary school	4.5	8.3
Preparatory school	41.1	29.7
Secondary school	39.3	44.1
University and above	14.3	17.9
Husbands' educational level		
Illiterate	0.9	1.4
Elementary school	8.0	4.2
Preparatory school	22.3	29.6
Secondary school	49.1	43.7
University and above	19.6	21.1
Women's work status		
House wife	93.8*	88.3
Working	1.8	8.3
Student	2.7	3.4
Others	1.8	0.0
Husbands' occupation		
Unemployed	16.1	8.3
Worker	42.9	37.2
Agriculture	5.4	6.9
Employee	16.1	21.4
Business owner	16.1	22.1
Other	3.6	4.1
Household composition		
Couple and children live with other family members	32.1	38.6
Average monthly family expenditure[a]	N=99	N=104
Less than 600 NIS	31.7**	21.2
From 600 to 1199 NIS	42.3	28.3
From 1200 to 2000 NIS	15.4	28.3
More than 2000 NIS	10.6	22.2

[a] 1 US dollar = NIS 4.02 (year 2000). The remaining participants reported that they did not know their monthly family expenditure.
*p= 0.05
** p<0.01

Table 5 shows reproductive history of participants in the two study groups. Participants in the intervention group married at a relatively later age compared to those in the control group (mean = 20.1 versus 18.7, respectively). Also, participants in the intervention group were more likely than those in the control group to have a history of abortion and/or miscarriage (27.6% versus 19.6%), though neither of the above differences was statistically significant. While participants in the two study groups had an equal number of living children (mean = 1.7), on average, those in the control group had slightly more sons than those in the intervention group (26.8% versus 15.2% had 2-3 sons), but again this difference was not statistically significant.

Table 5. Reproductive History of Study Participants

	Control (N=112)	Intervention (N=145)
Age at first marriage Mean (SD)	18.7 (3.2)	20.1 (4.3)
Age at first pregnancy Mean (SD)	19.4 (3.4)	20.7 (4.3)
Total number of pregnancies (%)		
1-2	27.7	37.9
3-4	50.0	43.4
5^{+}	22.3	18.6
Number of living children Mean (SD)	1.7 (0.8)	1.7 (0.8)
Number of living girls (%)		
0-1	85.5	77.9
2-3	14.5	22.1
Number of living boys (%)		
0-1	73.2	84.8
2-3	26.8	15.2
Sex of index baby (%)		
Boy	52.3	46.5
Girl	47.7	53.5
Previous history of abortion / miscarriage (%)	19.6	27.6
Birth weight of index baby (%)		
<2,500 kg.	4.5	6.9
2,500 < 3,000	35.7	41.1
3,000 < 3,500	38.4	29.0
3,500 < 4,000	17.9	17.9
4000^{+}	3.6	4.8

Participants' Reports on Home Visit(s)

Participants in the two study groups were asked a number of questions about the quality of the first home visits made by the CHW. In addition, participants in the intervention group were asked about the second home visits, including their opinions about the usefulness of those visits.

Table 6 shows that in more than one-third of cases some family member attended the visit with the woman (39.4%). The person who attended was most likely to be the mother in law (25.8% of cases) or sister in law (10.6% of cases).

According to participants' reports, motherhood-related topics that were discussed by the CHW during the second home visit were as follows: family planning methods (32.6%), maternal care (31.8%), breastfeeding (19.7%), and breast self-exam (12.1%). For the newborn, the CHW reportedly explained how to take care of the baby (50.8%) and conducted a physical exam (24.2%). The vast majority of respondents in the intervention group (87.9%), however, indicted that the CHW encouraged them to make a check up visit to the clinic with their baby 40 days after the birth.

When asked about their assessment of the usefulness of the second home visit, less than two-thirds of respondents (62.1%) indicated that the visit was useful. Reasons given by mothers for considering the visit useful were as follows: alerting her to important information, confirming information that she already had, educating her about family planning methods, and reassuring her about her health and that of her baby. Those who did not consider the visit useful said they already knew the information that was given to them by the CHW, that the information was the same as the first visit, or that they did not get any information from the CHW.

To further assess the two home visits, mothers in the two study groups were specifically asked if the CHW: (1) helped them make a decision about family planning, (2) explained breast self-examination to them, and (3) explained the Pap smear test to them.

Table 6 shows that more respondents in the intervention group than the control group indicated that the CHW helped them make a decision about family planning (58.6% versus 45.8%, respectively), but this difference was not statistically significant. However, significantly more women in intervention sites compared to control sites mentioned that the CHW was the one who informed them about the importance of the day 40 visit (64.4% versus 20.5%, $p<0.001$). On the other hand, more women in the control group reported that the CHW told them about breast self-examination during the home visit (64.3% versus 45.7%, $p<0.05$). About one-third of respondents reported that they heard about the Pap smear test through the CHW at the home visit (38.4% of intervention group participants and 37.0% of control group participants).

Table 6. Participants' Reports on the Conduct of the Home Visits

Characteristics of home visit(s)	Control N=112 %	Intervention N=132 %
First home visit		
Someone attended visit with woman	67.6	55.3
Topics discussed / activities undertaken during home visit:		
- Breastfeeding	76.6	64.9
- Maternal care	43.2	38.2
- Family planning	22.5	20.6
- Newborn was examined	70.3	67.4
- Infant care	38.7	40.2
Second home visit		
Someone attended visit with woman	--	39.4
Topics discussed / activities undertaken during home visit:		
- Breastfeeding	--	19.7
- Maternal care	--	31.8
- Family planning	--	32.6
- Newborn was examined	--	24.2
- Infant care	--	50.8
Additional topics discussed on first or second visit		
- Importance of day 40 visit	20.5	64.4***
- Decision about FP use	45.8	58.6
- Breast self-exam	64.3	45.7
- Pap smear test	37.0	38.4
Assessment of the home visit(s)		
- Believes first home visit was useful	78.6	82.6
- Believes second home visit was useful	--	62.1

*** $p<0.01$

Finally, all participants were asked if they had additional informational needs. The following topics were most frequently mentioned by participants: how to choose a contraceptive method (47.0%), benefits of breastfeeding (46.2%), and how to overcome breastfeeding problems (46.2%).

Impact of the intervention on women's knowledge and practices

Hypothesis I: Conducting an additional home visit to low parity women during the postpartum period will have a positive effect on their knowledge and practice regarding their own health, as well as that of their newborn child.

Knowledge of Possible Complications

Women were asked to mention maternal problems that would require medical care during the postpartum period. A *knowledge of maternal complications index* was developed with a total of eight items (e.g. acute vaginal bleeding, fever and chills, lower abdominal pain). Each respondent received a knowledge score depending on the total number of items that she mentioned (possible score range 0-8). A similar index was developed to measure mothers' knowledge of possible complications for the newborn during the postpartum period that would require medical care. The *knowledge of newborn complications index* had a total of 12 items (e.g. fever, cough, respiratory problems) with a possible score range of 0-12.

Table 7 shows that mothers' knowledge of maternal complications was similar in intervention sites compared to control sites. About three-quarters of mothers in either of the two studies knew fewer than three complications, and none knew all eight complications. Mothers in intervention sites were most likely to mention severe lower abdominal pain (38.6%), severe vaginal bleeding (40.3%), and severe breast pain (28.3%) as problems that required seeking medical advice.

Table 7. Mothers' Knowledge of Possible Maternal and Newborn Complications During the Postpartum Period

Knowledge scores	**Control (N=112)** %	**Intervention (N=132)** %
Maternal complications		
0<3	77.6	78.0
3<6	21.4	22.0
6^{+}	1.0	0.0
Newborn complications		
0<4	76.8	80.3
4<7	20.5	17.4
7^{+}	2.7	2.3

Knowledge of complications in the newborn was also similar in the two study groups, with more than three-quarters of mothers mentioning fewer than four complications and none mentioning all 12. Newborn health problems that were most likely to be mentioned by mothers in the intervention group were neonatal jaundice (35.4%), breathing problems (22.9%), fever (24.3%), and cough (20.1%).

Cleanliness/Personal Hygiene

Mothers' practices pertaining to personal hygiene and the cleanliness of their babies were also assessed. A surprising proportion of women (73.0%) reported that they had an episiotomy during the delivery. There was a significant difference between the two study groups in how the women reported caring for the wound. Women in control sites reported better practices than those in intervention sites (55.0% of women in control sites reported cleaning the site of the injury with disinfectant and water compared to 42.0% of the women in intervention sites, $p< 0.05$).

Mothers in the control group bathed more frequently during the postpartum period as compared to those in the intervention group, but this difference was not statistically significant (48.2% of control group mothers reported bathing every day compared to 36.6% of mothers in intervention group). The percent of mothers who bathed their infant every day during the postpartum period was quite low, with no significant differences between intervention and control sites. The above differences between intervention and control sites with regard to cleanliness and personal hygiene persisted even after controlling for place of residence, type of clinic, maternal age, and family expenditure.

Table 8. Percent of Correct Knowledge and Practices in Relation to Breastfeeding And Weaning in the two Study Groups

	Control (N=112) %	**Intervention (N=145)** %
Still breastfeeding	76.1	78.1
Breastfeeding on demand	64.2	69.1
Waited at least three months before giving fluids	9.3	8.9
Knew correct time to introduce solid foods	81.1	84.5
Started giving solid foods at least four months after birth	80.0	86.0

<u>Knowledge and Practices Related to Breastfeeding and Weaning</u>

Mothers in the two study groups were asked if they were still breastfeeding their babies at six months after delivery. Table 8 shows that about three-quarters of mothers in the two study groups were still breastfeeding their babies at the time of the home interview (six months after the index delivery), with no significant differences between intervention and control groups (78.1% versus 76.1%, respectively). However, when family expenditure was controlled for it was found that among participants with expenditure below 1,200 NIS, intervention group participants were more likely to be breastfeeding at six months compared to control group participants.

Mothers were also asked how frequently they were breastfeeding their babies. About two-thirds of mothers indicated that they breastfed on demand, with no significant differences between intervention and control groups (69.1% versus 64.2%, respectively).

Table 8 shows that only a few mothers indicated that they waited at least three months before giving the newborn fluids, with no significant differences between participants in intervention and control clinics.

A majority of mothers also indicated that they waited at least four months before giving their babies solid food (86.0% of mothers in the intervention group and 80.0% of mothers in the control group). Slightly more mothers in the control sites compared to the intervention sites reported that they started giving their infants solid food during the first three months (20.0% versus 14.0%, respectively).

As to knowledge of best time to start weaning a newborn, the majority of mothers in the two study groups indicated that it was at 4-6 months, with no significant differences between participants in intervention or control groups (84.5% and 81.1%, respectively). Moreover, about one-half of respondents in the two study groups knew that the best way to wean a baby is

through gradual decrease of the number of breast feedings, with no significant differences between the two study groups.

Immunization Practices

Mothers in the two study groups were asked about the immunizations their infants received during the six months preceding the interview and the number of times each vaccine was received. The three vaccines of interest were polio, DPT (Diphtheria, Pertussis and Tetanus), and Hepatitis B. The assumption is that by the sixth month, each infant should have received at least three doses of each of the above vaccines. To verify responses, mothers were asked to show the vaccination card to the interviewer.

Table 9. Percent Distribution of Immunization Status by Study Group

Immunization status[a]	Control (N=109) %	Intervention (124) %
Infant received all three vaccines	48.6	51.4
Infant received 3^+ doses of polio vaccine	86.5	76.6
Infant received 3^+ doses of DPT vaccine	31.3	25.2
Infant received 3^+ doses of hepatitis B vaccine	35.4	30.2

[a] The remaining cases either did not give any immunizations to the infant or their answers were missing.

Table 9 shows that by the sixth month about half of the infants had received at least one dose of each of the three vaccines, with no significant differences between the intervention and control groups (51.4% versus 48.6%, respectively). More children in the control group had received at least three doses of the polio vaccine by the sixth month (86.5% versus 76.6%, respectively, p=0.06). This difference became more statistically significant after controlling for type of clinic, with control group participants in Patient's Friends Society clinics more likely than those in the intervention group to have given their infants at least three doses of the polio vaccine.

On the other hand, the proportion of infants who received three doses of the DPT vaccine or the Hepatitis B vaccine was similar in the two study groups (25.2% versus 31.3% for DPT and 30.2% versus 35.4% for Hepatitis B). The association between the intervention and frequency of giving these two vaccines did not change after controlling for potential confounders.

Hypothesis II: Conducting an additional home visit to low parity mothers during the postpartum period will have a positive effect on utilization of health care services postpartum, particularly an increase in day 40 clinic visits.

Mothers were asked if they visited the MCH clinic after delivery, how many times they visited, and if they specifically visited the clinic on day 40. Table 10 shows that the vast majority of mothers visited the MCH clinic after delivery, but the proportion was higher in the control group than the intervention group (90.2% versus 73.8%, respectively, p<0.01). Also, mothers in the control group made on average more visits to the MCH, compared to mothers in the intervention group (3.6 versus 3.2 visits, respectively, p<0.05).

However, when asked specifically about the day 40 visit, significantly more respondents from the intervention group reported visiting the clinic on day 40 (49.1% versus 35.6%, p<0.05). Other variables that were positively associated with making the day 40 visit were: husband's encouragement to make the visit (p<0.001), women's age under 25 (p=0.06), and husband working as a laborer, business owner, agriculturist or unemployed (p<0.05).

Table 10. Utilization of MCH Services after Delivery Among the Two Study Groups

Aspect of clinic utilization	Control (N=112) %	Intervention (N=145) %
Visited clinic on day 40	35.6	49.1*
Conducted any visit to the clinic after delivery	90.2	73.8**
Mean # of visits	3.6	3.2*

* p=0.05
** p<0.01

Mothers who did not visit the clinic after delivery were asked why they didn't. The primary reason given by mothers was that there was no need for that visit (50.0% of intervention group participants and 60.0% of control group participants). Other reasons that were mentioned included husband refusal and lack of time.

Based on mothers' reports, services rendered at the day 40 visit were as follows: taking the baby's weight (66.9% of mothers who attended a day 40 visit), taking the baby's height (58.9%), giving a family planning method to the mother (39.5%), and checking the mother's uterus (33.9%). Other services such as child immunization, counseling on how to breastfeed the baby, counseling on contraception, breast examination, or checking the episiotomy were reported by less than one-fourth of respondents.

All participants were asked whether they perceived the day 40 clinic visit as important and/or useful. A significantly higher proportion of women in the intervention group reported that they thought the visit was important (82.5% versus 53.2% of the control group, p<0.001). Also, significantly more respondents in the intervention sites mentioned that the CHW alerted them to the importance of day 40 visits (64.4% versus 20.5%, p<0.001).

Of women who visited the clinic on day 40, about half rated the service as excellent with no significant differences between intervention and control sites (45.1% and 50.0%, respectively).

Hypothesis III: An additional home visit to low parity mothers during the postpartum period will have a positive effect on social support (particularly husband support) provided to the low parity mothers.

Two types of husband support were assessed in the present study, namely support to seek health care and support of family planning use. To assess support provided by the husband, women in the two groups were asked the following questions: (1) if they discussed the timing of their next pregnancy with their husband, (2) if their husband had a preference for birth interval before having their next child, (3) if they discussed use of a family planning method with their husband after the last delivery, (4) if their husband was supportive of family planning use, and (5) if their husband encouraged them to visit the clinic on day 40 after

the birth. Moreover, mothers who reported use of family planning were asked if their husbands encouraged them to use a method, and those who reported their newborn had been sick during the postpartum period were asked if their husband encouraged them to take the child to a clinic. Finally, participants were asked to what extent they were satisfied with the support they received from their husbands during the postpartum period.

Table 11. Social Support Provided by Husbands in the Two Study Groups

Aspect of support	Control (N=110) %	Intervention (N=124) %
Couple discussed timing of next pregnancy	77.0	86.0*
Husband wants birth interval of 3+ years	56.7	25.8***
Couple discussed use of FP after last delivery	87.3	79.0
Husband supports use of FP	78.2	67.7
Husband encouraged wife to make day 40 visit	29.0	51.0*
Husband encouraged wife to use FP [a]	69.2	68.8
Husband encouraged wife to take sick child to clinic [b]	81.9	81.5
Respondent satisfied with support received from husband during postpartum period	77.7	74.6

[a] The denominator for this percentage is mothers who reported current use of family planning.
[b] The denominator for this percentage is mothers who reported child sickness during the postpartum period.
*p<0.05
*** p< 0.001

Table 11 shows that significantly more mothers in the intervention group compared to the control group reported that they discussed the timing of their next pregnancy with their husband (86.0% versus 77.0%, p<0.05). Based on the women's reports, more husbands in control sites want to wait for at least three years before having their next child (56.7% versus 25.8%, p<0.001).

The proportion of women who reported discussing family planning with their husbands following the last delivery was slightly higher in the control than in the intervention clinics (87.3% in the control group versus 79.0% in the intervention group). The proportion of women who indicated that their husbands were supportive of family planning was also higher in the control sites (78.2% in control clinics versus 67.7% in intervention clinics). Neither of the above differences was statistically significant, however.

Table 11 also shows that among mothers currently using family planning methods, the percentage who indicated that their husband encouraged them to use a family planning method was almost identical in the two study groups. However, the percentage of husbands who encouraged their wife to visit the clinic at day 40 was significantly higher in the intervention group (51.0% versus 29.0%, p<0.05).

Among mothers who reported child sickness during the postpartum period, there was no difference in the percentage of husbands who encouraged their wife to take the sick child to the clinic (about 82% in both sites). The majority of respondents indicated that they were satisfied with the support they received from their husbands during the postpartum period with slight

differences between the intervention and control groups (74.6% of intervention group mothers and 77.7% of control group mothers).

The above differences between the two study groups persisted even after controlling for place of residence, type of clinic, maternal age, and family expenditure.

Hypothesis IV: The additional home visit to the mothers during the postpartum period will have a positive effect on contraceptive use, approximately six months postpartum.

Knowledge of LAM as a Family Planning Method

Mothers were asked to list the four criteria for effective use of LAM as a family planning method (i.e. exclusive breastfeeding, amenorrhea, infant's age being less than six months, and no supplementary feeding). Table 12 shows that the majority of respondents knew only one or two of the criteria, with no differences between the study groups. The single criterion that was most likely to be mentioned by participants was continuous breastfeeding.

The CHW was more likely to be the most important source of information on LAM for respondents in the intervention group than for those in the control group (42.0% versus 22.0%, $p<0.01$).

Table 12. Participants' Knowledge of LAM as a Family Planning Method

# of items mentioned	Control (N=105) %	Intervention (N=119) %
Knowledge of criteria for effective use of LAM		
0 items	39.3	47.7
1-2 items	58.9	51.5
3-4 items	1.8	0.8
CHW most important source of information on LAM	22.0	42.3**

** $p<0.01$

Family Planning Intentions and Behaviors

In the home interview, mothers were asked how long they would like to wait before having their next child, and if they were currently using a family planning method. Those who reported use of a family planning method were asked about the method that they were using, when they started using family planning, and if the CHW helped them make a decision about family planning use during the home visit. Those who reported that they were not using a family planning method were asked if they intend to use one in the future and, if so, when they were planning to start.

Table 13 shows that the majority of respondents want to have more children in the future, but this percentage is significantly higher in intervention than in control sites (95.9% versus 64.3%, $p<0.05$).

Moreover, fewer mothers in the intervention group than the control group would like to wait for at least three years before having their next child (27.6% versus 48.6%, respectively, $p<0.01$).

Table 13. Fertility and Family Planning Intentions and Behaviors in Intervention and Control Sites

	Control (N=112) %	**Intervention (N=145)** %
Mother wants more children	64.3	95.9*
Would like to wait at least 3 years before next delivery	48.6	27.6**
Currently using FP	63.4	65.2
Started FP use < 2 months after delivery[a]	72.0	81.5
CHW helped mother make a decision about FP[a]	45.8	58.6
Intends to use FP in the future	(N not using FP=41) 80.0	(N not using FP=46) 69.4

[a] The denominator for these percentages is mothers who are currently using contraception.
*$p<0.05$
** $p<0.01$

About two-thirds of respondents were already using a family planning method at the time of the home interview, with no significant differences between the intervention and control groups (65.2% and 63.4%, respectively). Slightly more than one-third of respondents were using a modern method of contraception (35.2%), the IUD being the most common method (24.6% of intervention group participants and 20.4% of control group participants). Other methods that were mentioned by respondents were breastfeeding (17.9% of the intervention group versus 11.1% of the control group), withdrawal (14.2% of intervention group and 11.1% of control group mothers), and oral pills (9.0% of the intervention group and 12.0% of the control group). Condoms, rhythm method, and injectables combined were used by less than 10 percent of respondents.

Women in the intervention group were somewhat more likely to start using contraception within the first two months after delivery, but the difference was not statistically significant (81.5% versus 72.0%).

The majority of respondents who were not currently using family planning reported that they intend to use family planning in the future, with no significant difference between the two study groups in that respect. However, the majority of those respondents indicated that they would start using family planning after they have their next child.

Factors associated with use of a family planning method were investigated. Bivariate analysis showed that respondents whose husbands attained secondary education or higher were significantly more likely to be currently using family planning than those whose husbands completed fewer years of education ($p<0.05$). The index child being a boy was weakly associated with current use of family planning ($p=0.07$). A positive husband attitude towards family planning and discussion of family planning with the husband following the index delivery were both associated with use of a family planning method at six months ($p<0.001$). Interestingly, mothers who were still breastfeeding their index child were significantly more likely to be using contraception at six months ($p<0.01$). Respondents' level of education, place of residence,

discussion of family planning with CHW during first or second home visit, or visiting the clinic at day 40 were not associated with use of family planning at six months.

A logistic regression analysis was performed with current use of family planning as the dependent variable and the following as independent variables: husband's education, sex of index child, husband's attitude towards family planning, discussion of family planning use with husband following index delivery, and breastfeeding status. The analysis identified the following variables as most predictive of contraceptive use at six months: husband's education of secondary or higher (B=0.64, $p<0.05$), a positive husband attitude towards family planning (B=0.39, $p<0.05$) and continued breastfeeding (B=1.14, $p<0.001$).

Hypothesis V: The additional home visit will have a positive effect on breast and cervical cancer awareness and prevention practices among low parity women.

Mothers in the two study groups were asked about their knowledge and practices in relation to breast self-examination and Pap smear testing, and if the CHW had spoken with them about these tests. Table 14 shows that significantly more mothers in the control group compared with the intervention group reported that the CHW spoke to them about breast self-examination during the home visit (64.3% versus 45.7%, p=0.020). Also, more mothers in the control group than the intervention group knew how to conduct a breast self-examination (64.3% versus 46.5%, p=0.019), and a higher proportion reported performing a breast self-examination since the last delivery (45.0% in control sites versus 27.3% in interventions sites, $p<0.01$).

The two study groups were similar, however, on the proportion of respondents who knew that breast self-examination should be conducted once a month (24.1% in control sites and 22.0% in intervention sites). However, more respondents in the control group compared with the intervention group knew that the breast self-exam should be done after menses (32.1% versus 15.7%, p=0.002).

Knowledge of manifestations to look for while conducting a breast self-examination was quite low in the two study groups. On average, participants in each group mentioned only one of the four manifestations that should be checked for (i.e. hard lump in the breast, changes in appearance of breast skin, changes in shape of the breast and bloody discharge from the nipples) (mean knowledge score=1.2 versus 1 items in the intervention group). When women were asked what they should do if they find a lump in their breast, slightly more respondents in control clinics compared to intervention sites knew they should consult a physician immediately (90.1% of control group respondents and 82.0% of intervention group respondents). This difference, however, is not statistically significant.

With regard to the Pap smear test, slightly more than half of mothers in the two study groups heard about the test, with no significant differences between the intervention and control groups (52.7% versus 61.6%, respectively). Slightly more respondents in the control group knew the right time to have a Pap smear test after delivery (i.e. after day 40, and once yearly thereafter) (23.2% versus 18.2%). But again, this difference is not statistically significant.

About one-third of respondents reported that they heard about the Pap smear test through the CHW during the home visit (38.4% of intervention group participants and 37.0% of control group participants). The proportion of mothers who reported that they had a Pap smear test after the index delivery was very small and was similar in the two study groups, with no significant differences between intervention and control sites (3.8% in intervention sites and 4.5% in control sites).

Table 14. Respondents' Knowledge and Practices in Relation to Breast Self-exam (BSE) and Pap Smear Test

	Control (N=112) %	Intervention (N=129) %
Breast self-exam		
- Know how to conduct BSE	64.3	46.5*
- CHW spoke to respondent about BSE	64.3	45.7*
- Know that BSE should be done once every month	24.1	22.0
- Know that BSE should be done after menses	32.1	15.7**
- Knowledge of items to look for during BSE (mean score)[a]	1.2	1.0
- Conducted BSE since index delivery	45.0	27.3**
Pap smear test		
- Heard of Pap smear test	52.7	61.6
- Knows right time to have Pap smear test after delivery	23.2	18.2
- CHW spoke to respondent about Pap smear test	37.0	37.9
- Had a Pap smear test after index delivery	4.5	3.8

[a] Possible score range for this index is 0-4 (0 = respondent did not know any manifestations, 4 = respondent mentioned all four manifestations).
* $p<0.05$
** $p<0.01$

DISCUSSION

This study was designed to measure the effectiveness of a second home visit on low parity women in (1) improving their knowledge and practices regarding their own health as well as the health of their newborn child, (2) increasing utilization of health care services postpartum, particularly the day 40 clinic visit, (3) increasing husband support, (4) increasing contraceptive use at six months postpartum, and (5) improving awareness and practice of breast and cervical cancer prevention techniques.

The study results showed that a second home visit by the CHW was associated with a substantial increase in the likelihood of visiting the MCH clinic at day 40 (49.1% of intervention group mothers versus 35.6% of control group mothers visited). Attendance was also associated with increased support provided by husbands who encouraged their wives to visit the clinic on day 40 (51.0% of intervention group husbands versus 29.0% of control group husbands), and increased husband-wife communication about timing of next pregnancy (86.0% of intervention group couples versus 77.0% of control group couples).

The intervention, however, was not associated with improved knowledge or practices of low parity mothers regarding their own health or that of their newborn child. Neither was the intervention associated with improved awareness and practices regarding breast self-examination and Pap smear testing. It is noteworthy that control group mothers were more aware of how to perform a breast self-examination (64.3% versus 46.5%) and were more likely to have performed breast self-exam after the last delivery (45.0% versus 27.3%).

Despite the fact that intervention group mothers were more likely to visit the MCH clinic on day 40, control group mothers were more likely to visit the clinic at times other than day 40, and in fact visited the MCH clinic more frequently in the first six moths after delivery compared to intervention group mothers (average number of visits is 3.6 for the control group versus 3.2 for the intervention group).

Interestingly, although more intervention group mothers visited the clinic on day 40, the intervention was not associated with increased use of family planning methods at six months after delivery. On the other hand, factors predictive of contraceptive use were husbands' education, husbands' support of family planning, and continued breastfeeding. The first two factors do highlight the importance of including husbands in future interventions for low parity women. The association between continued breastfeeding and use of family planning was unexpected. Further investigation of the dynamics of breastfeeding as well as factors that influence continuation of breastfeeding in the Palestinian society is needed.

It is noteworthy that services provided during the day 40 visit were mostly geared towards the newborn. While a majority of mothers reported that the weight and height of the newborn were taken during the day 40 visit, less than one-quarter of mothers reported that they received family planning counseling, counseling on how to breastfeed the baby, breast examination, or Pap smear testing. It is likely that women visit clinics mainly to receive services for their newborns and hence do not request postpartum services for themselves. In fact, another study conducted under the PHP research project in the West Bank and Gaza revealed that a majority of women visit the MCH center after delivery only to seek newborn services and immunizations.[15]

It is important that health care providers maximize the benefits of the postpartum visit to include services for both the mother and newborn. As mothers see for themselves the benefits of the visit, they are likely to make more visits and/or encourage their relatives and friends to visit the clinic at day 40. Health education campaigns should also encourage mothers to seek services for themselves during the day 40 visit. It is noteworthy that the posttest survey indicated an increase in percent of postpartum women who made return visits to clinics on day 40 seeking services for themselves compared with the pretest survey.[16]

A number of factors may have undermined the impact of the intervention on mothers' knowledge and practices. First, as a result of the deteriorating political conditions in the study sites, it is likely that the intervention was not properly implemented by some of the participating clinics. As mentioned earlier, frequent checkpoints and the siege imposed by the Israeli army often interfered with the CHWs' ability to conduct home visits. Moreover, due to the prevailing political conditions some NGOs may have given higher priority to emergency services than to postpartum services.

The above conditions may have also interfered with proper monitoring and supervision of CHWs' performance during the second home visit. In fact, there is evidence to suggest that information given by the CHW during the second home visit was not sufficient to make a tangible difference in mothers' knowledge or practices. With the exception of emphasizing the importance of day 40 visit, which was discussed in most of the home visits, other topics/activities such as breastfeeding, maternal care, family planning, and examination of the newborn child were discussed/performed in less than one-third of visits. Information on breast self-exam and Pap smear testing was also provided in a minority of the above visits.

It is noteworthy that very few husbands were present during the CHW visits, which were probably conducted in the morning when husbands were at work. Involving men is considered crucial to improving the reproductive health of women. In fact, this study has shown that husband support is a very strong predictor of family planning use and the likelihood that a woman will visit the MCH clinic at day 40. A study on male involvement conducted by HDIP under PHP activities showed that many men are interested in greater involvement but lack adequate sources of information.[17] Hence, interventions targeting men as well as women have a greater chance of success.

[15]HDIP 2002, Outreach Linkages with Public Hospitals to Promote Postpartum Care
[16]Alpha International, 2002, Assessment of Pilot Health Project Outcome Indicators: West Bank/Gaza
[17] HDIP 2002, Involving Men in their Wives' Postpartum Care in Palestine

Lastly, the sampling technique that was used in the present study may also have contributed to masking the intervention's effect. Using clinic caseload as the main criterion for matching intervention and control clinics has resulted in two groups of clinics that were not comparable on a number of characteristics, namely place of residence, participant's age, family expenditure, and type of clinic. The above variables have probably confounded the association between the study intervention and some of the outcomes of interest. While selecting intervention and control group participants from the same clinics would have enhanced comparability of the two study groups (in fact, this was the initial study design), this design would have required more rigorous monitoring and supervision which was not feasible due to the political situation.

RECOMMENDATIONS

- ***At least one home visit should be made to low parity women during the postpartum period.***

The CHW is an important source of information to low parity women. However, due to cost and staffing limitations, it may be more realistic to limit the visits to a single home visit that is conducted around the middle of the postpartum period. NGO managers and supervisors should realize the importance of that visit as well as of postpartum services in general. Moreover, all logistical/staffing constraints that impede the visit should be addressed.

- ***Performance of community health workers during home visits needs improvement.***

Proper monitoring and supervision are necessary to ensure that home visits are conducted and that there is a complete exchange of information during the visit. Moreover, managers and supervisors should ensure that home visits to low parity women cover the following information (in addition to emphasizing the importance of the day 40 visit to the clinic): how to choose a contraceptive method, benefits of breastfeeding, and how to overcome breastfeeding problems. There is also a need to inform low parity mothers about the criteria for efficient use of LAM as a method of contraception. Prevention practices such as breast self-examination and Pap smear testing should also be discussed during home visits. CHWs should explain to women the steps for breast self-examination, as well as the timing for breast self-examination and for Pap smear testing. CHWs' knowledge about items to be covered during the home visit should be assessed. Any deficiencies in knowledge should be addressed through additional training.

- ***Efforts should be made to involve the husbands of low parity women.***

As husbands of low parity mothers play a crucial role in the decision to visit the clinic or to use family planning, every effort should be made to reach husbands of low parity women. Joint counseling may be more effective than

providing counseling to the mother alone. Home visits by the CHW should therefore be conducted in the afternoons when the husbands are back from work. It may also be helpful to provide written material (e.g. brochures, pamphlets) to women so they can share the information with their husbands. Husbands with fewer years of education are most likely to be opposed to family planning use and hence deserve the greatest attention.

- ***Mothers should be encouraged to seek postpartum care.***

  During home visits the CHW should emphasize the importance of the day 40 visit for both the mother and the child. The CHW should encourage mothers to request services for themselves even if they do not have any symptoms.

- ***Services provided during the day 40 visit should cater to the needs of the mother as well as the newborn.***

  Improving quality of services during the day 40 visit would contribute to better knowledge and practices among low parity mothers and would encourage more mothers to visit the clinic. The following services should be provided to all mothers during the postpartum visit: counseling on family planning methods including LAM, check-up of the involution of the uterus, and Pap smear testing. During that visit mothers should be encouraged to continue breastfeeding, and any problems or concerns that they have around breastfeeding should be addressed. Health providers should also conduct breast exams for all mothers and should teach mothers the steps of breast self-examination including the appropriate time to conduct it.

- ***Use of mass media as a means for disseminating health information to low parity mothers should be investigated.***

  TV viewership is high in Palestinian society. Use of mass media for disseminating health messages would have the advantage of reaching a large number of low parity mothers, as well as their husbands. Media messages should encourage women to seek postpartum care and should educate couples to space their births for the health benefits to both the mother and the child. Health hazards associated with closely spaced pregnancies should also be stressed. However, the content of the messages and the timing of the broadcast should be carefully selected in order to avoid undue embarrassment to couples in the presence of their children.